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| 09/993,387 | 11/16/2001 | Jeffrey Raynor | 00ED18852609 | 4936 |

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EXAMINER

DANIELS, ANTHONY J

| ART UNIT | PAPER NUMBER |
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2615

DATE MAILED: 06/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|---------------------------------------|--------------------------------------|--|
| Office Action Summary | Application No. 09/993,387 | Applicant(s) RAYNOR ET AL. | |
| | Examiner Anthony J. Daniels | Art Unit 2615 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 November 2001.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-40 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 11-40 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 2/27/02 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 11-19,21-28,30-39 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee et al. (US # 6,466,265).

As to claim 11, Lee et al. teaches a solid state imaging device (Figure 2a) comprising: a two-dimensional array of pixels defining an image plane (Figure 2a, pixel array “10”); and readout electronics (Figure 2a, channels 1-4-column-address/signal-processing/output “11” – “14”) comprising least one store circuit (Figure 5, capacitors

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“Cr” and “Cs” of the processing circuits “11” and “13”; Col. 5, Lines 36-46) laterally adjacent the image plane for reading signals therefrom (Figure 2a).

As to claim 12, Lee et al. teaches a solid state imaging device according to Claim 11 further comprising a multiconductor signal bus (Figure 2a, wires connected from the pixels “1” - “4” to the processing circuits “11” - “14”; *{Examiner interprets multiconductor signal bus as seen in Figure 6 of the specification; a plurality of wires that connect respective pixels to the readout electronics.}*) connected between said array of pixels and said readout electronics (Figure 2a).

As to claim 13, Lee et al. teaches a solid state imaging device according to claim 12, wherein each pixel (Figure 2a, pixels “1” - “4”) comprises: a photosensitive diode (*A photosensitive diode is inherent in the CMOS pixel array of Figure 2a.*); and a switching circuit for resetting and discharging said diode (*It is inherent in the CMOS pixel array of Figure 2a to have a switching circuit for discharging the diode (Col. 3, Lines 25-34), and it is also inherent for the switching circuit to reset the diode because of the CDS circuitry of the processing circuits “11” - “14” that requires the reset signal of the pixel.*), said switching circuit comprising a first transistor for applying a reset pulse, and second transistor for connecting said diode to a conductor (*It is inherent in CMOS imaging devices to use transistors to apply these reset pulses and to transferring the pixel charge to the readout conductor.*) within said multiconductor signal bus (Figure 2a).

As to claim 14, Lee et al. teaches a solid state imaging device according to Claim 11, wherein said multiconductor signal bus comprises plurality of stacked conductors (Figure 2a, wires from pixels “3”, “4”; *{Examiner interprets stacked conductors as conductors that are located next to each other as seen in Figure 6 of the specification.}*).

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As to claim 15, Lee et al. teaches a solid state-imaging device according to Claim 11, wherein said readout electronics are laterally adjacent one side of the image plane (Figure 2a, processing circuits "13", "14" to the bottom of the pixel array "10").

As to claim 16, Lee et al. teaches a solid state imaging device according to Claim 11, wherein said readout electronics are laterally adjacent two opposing sides the image plane (Figure 2a, processing circuits "11", "12" at the top of the pixel array "10"; processing circuits "13", "14" to the bottom of the pixel array "10").

As to claim 17, Lee et al. teaches a solid state-imaging device according to Claim 11, wherein all pixels of said array of pixels are reset simultaneously and are read out simultaneously (Col. 1, Lines 59-67, Col. 2, Lines 1-8; *{It is inherent that the pixels can be reset simultaneously if they are read out simultaneously.}*).

As to claim 18, Lee et al. teaches a solid state imaging device according to Claim 11, wherein said at least one store circuit comprises plurality of store circuits (Figure 2a, Figure 5, capacitors "Cr" and "Cs" of processing circuit "11") with a store circuit corresponding to each pixel (Figure 2a, *{The processing circuit "11" belonging to the pixel "1"}*) and comprising: a first store circuit for storing a first reset value (Figure 5, capacitor "Cr"; Col. 5, Lines 36-43); and a second store circuit for storing a read out value (Figure 5, capacitor "Cs"; Col. 5, Lines 36-43), with the read out value of a given pixel being modified by the stored reset value that pixel (Col. 5, Lines 43-46; *{The difference amplifier "93" of Figure 5 subtracts the reset value from the signal value.}*).

As to claim 19, Lee et al. teaches a solid state imaging device according to Claim 18, wherein each store circuit further comprises: a third store circuit for storing a second reset value (Figure 2a, Figure 5, capacitor "Cr" of processing circuit "13" from pixel

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“3”), with a current reset value (Figure 2a, Figure 5, reset value on capacitor “Cr” of processing circuit “11”) and a current read out value (Figure 2a, Figure 5, signal value on capacitor “Cs” of processing circuit “11”) being processed simultaneously based upon application a new reset pulse (*It is inherent that these values are processed simultaneously when a new reset pulse is applied.*).

As to claims **30,31,34-39**, claims 30,31,34-39 are method claims corresponding to the apparatus claims 11,12,14-19, respectively. Therefore, claims 30,31,34-39 are analyzed and rejected as previously discussed with respect to the apparatus claims 11,12,14-19, respectively.

As to claim **21**, Lee et al. teaches a solid state imaging device (Figure 2a) comprising: a two-dimensional array of pixels defining an image plane (Figure 2a, pixel array “10”), each pixel comprising a photosensitive diode (*A photosensitive diode is inherent in the CMOS pixel array of Figure 2a.*), switching circuit for resetting and discharging said diode (*It is inherent in the CMOS pixel array of Figure 2a to have a switching circuit for discharging the diode (Col. 3, Lines 25-34), and it is also inherent for the switching circuit to reset the diode because of the CDS circuitry of the processing circuits “11” – “14” that requires the reset signal of the pixel.*); a signal bus connected to said array pixels (Figure 2a, wires connected from the pixels “1” - “4” to the processing circuits “11” – “14”; *{Examiner interprets signal bus as seen in Figure 6 of the specification; a plurality of wires that connect respective pixels to the readout electronics.}*); and readout electronics (Figure 2a, channels 1-4-column-address/signal-processing/output “11” – “14”) comprising at least one store circuit (Figure 5, capacitors “Cr” and “Cs” of the processing circuits “11” and “13”; Col. 5, Lines 36-46) laterally

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adjacent the image plane and connected to the signal bus for reading signals from said array of pixels (Figure 2a).

As to claim **22**, Lee et al. teaches a solid state imaging device according to Claim 21, wherein said signal bus comprises a multiconductor signal bus (Figure 2a, wires connected from the pixels "1" - "4" to the processing circuits "11" - "14"; *{Examiner interprets multiconductor signal bus as seen in Figure 6 of the specification; a plurality of wires that connect respective pixels to the readout electronics.}*); and wherein said switching circuit comprising a first transistor for applying a reset pulse, and second transistor for connecting said diode to a conductor (*It is inherent in CMOS imaging devices to use transistors to apply these reset pulses and to transferring the pixel charge to the readout conductor.*) within said multiconductor signal bus (Figure 2a).

As to claim **23-28**, the limitations in claims 23-28 can be found in claims 14-19, respectively. Therefore, claims 23-28 are analyzed and rejected as previously discussed with respect to claims 14-19, respectively.

As to claim **32**, Lee et al. teaches a method according to Claim 30, further comprising forming each pixel using a photosensitive diode (*A photosensitive diode is inherent in the CMOS pixel array of Figure 2a.*), and a switching circuit connected thereto for resetting and discharging the diode (*It is inherent in the CMOS pixel array of Figure 2a to have a switching circuit for discharging the diode (Col. 3, Lines 25-34), and it is also inherent for the switching circuit to reset the diode because of the CDS circuitry of the processing circuits "11" - "14" that requires the reset signal of the pixel.*).

As to claim **33**, Lee et al. teaches a method according to Claim 32, wherein the switching circuit comprises a first transistor for applying a reset pulse, and second

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transistor for connecting said diode to a conductor (*It is inherent in CMOS imaging devices to use transistors to apply these reset pulses and to transferring the pixel charge to the readout conductor.*) within said multiconductor signal bus (Figure 2a).

Claim Rejections - 35 USC § 103

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 20,29,40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (see Patent Number above) in view of Decker et al. (US 20020154231).

As to claim 20, Lee et al. teaches a solid state imaging device according to Claim 19, wherein said readout electronics further comprises: a differential amplifier (Figure 5, difference amplifier "93") connected to said first, second and third store circuits (Figure 2a, Figure 2e, Figure 5). The claim differs from Lee et al. in that it further requires a reset circuit for placing said differential amplifier a common mode reset state prior to reading a signal.

In the same field of endeavor, Decker et al. teaches a CMOS imaging array (Figure 3) with readout electronics including a CDS circuit including a difference amplifier (Figure 7, amp "700") that is put into a common-mode state upon receiving a pulse signal at a transistor (Figure 7, transistor "M705"; $\phi 1$; [0065], Lines 7-15). In light of the teaching of Decker et al., it would have been obvious to one of ordinary skill in the art to include the ability of the difference amplifier of Lee et al. to be put in a common-mode state thereby ensuring the correct difference between the signal values and reset values.

As to claim 29, the limitations of claim 29 can be found in claim 20. Therefore, claim 29 is analyzed and rejected as previously discussed with respect to claim 20.

As to claim 40, claim 40 is a method claim corresponding to the apparatus claim 20. Therefore, claim 40 is analyzed and rejected as previously discussed with respect to claim 20.

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Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony J. Daniels whose telephone number is (571) 272-7362. The examiner can normally be reached on 8:00 A.M. - 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Ometz can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AD
6/8/2005


NGOC-YEN YU
PRIMARY EXAMINER